

ECON 222A

Macroeconomic Theory I

Business Cycles

Lecture 16

Today's Lecture

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- Business Cycles

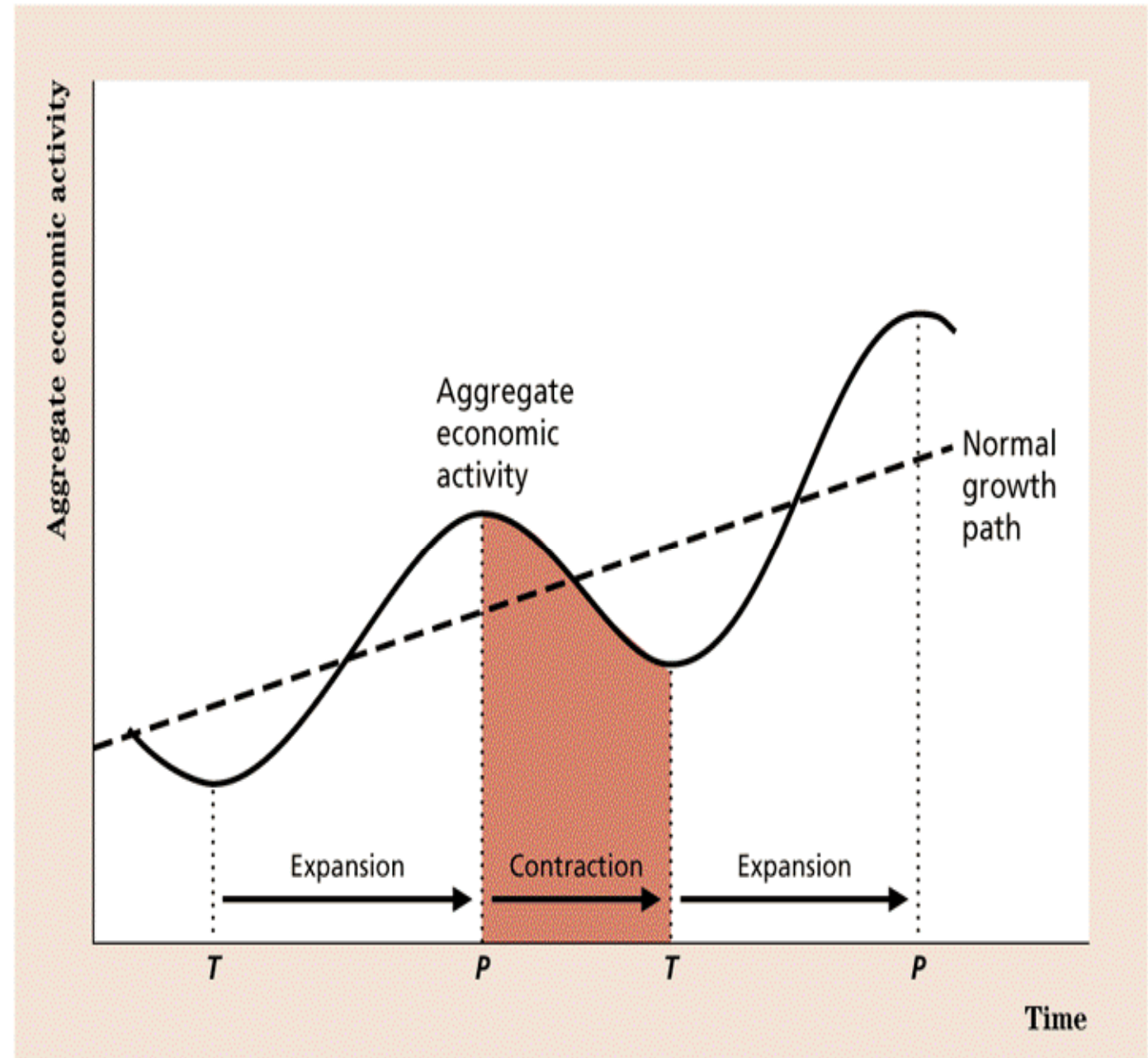
Business Cycles

- Fluctuations around a normal growth path for the economy: it's a sequence of recessions and expansions
- Happens across industries
- Recurrent, not periodic
- Persistent

FIGURE 8.1

A BUSINESS CYCLE

The solid curve graphs the behaviour of aggregate economic activity over a typical business cycle. The dashed line shows the economy's normal growth path. During a contraction, aggregate economic activity falls until it reaches a trough, *T*. The trough is followed by an expansion during which economic activity increases until it reaches a peak, *P*. A complete cycle is measured from peak to peak or trough to trough.



Business Cycles

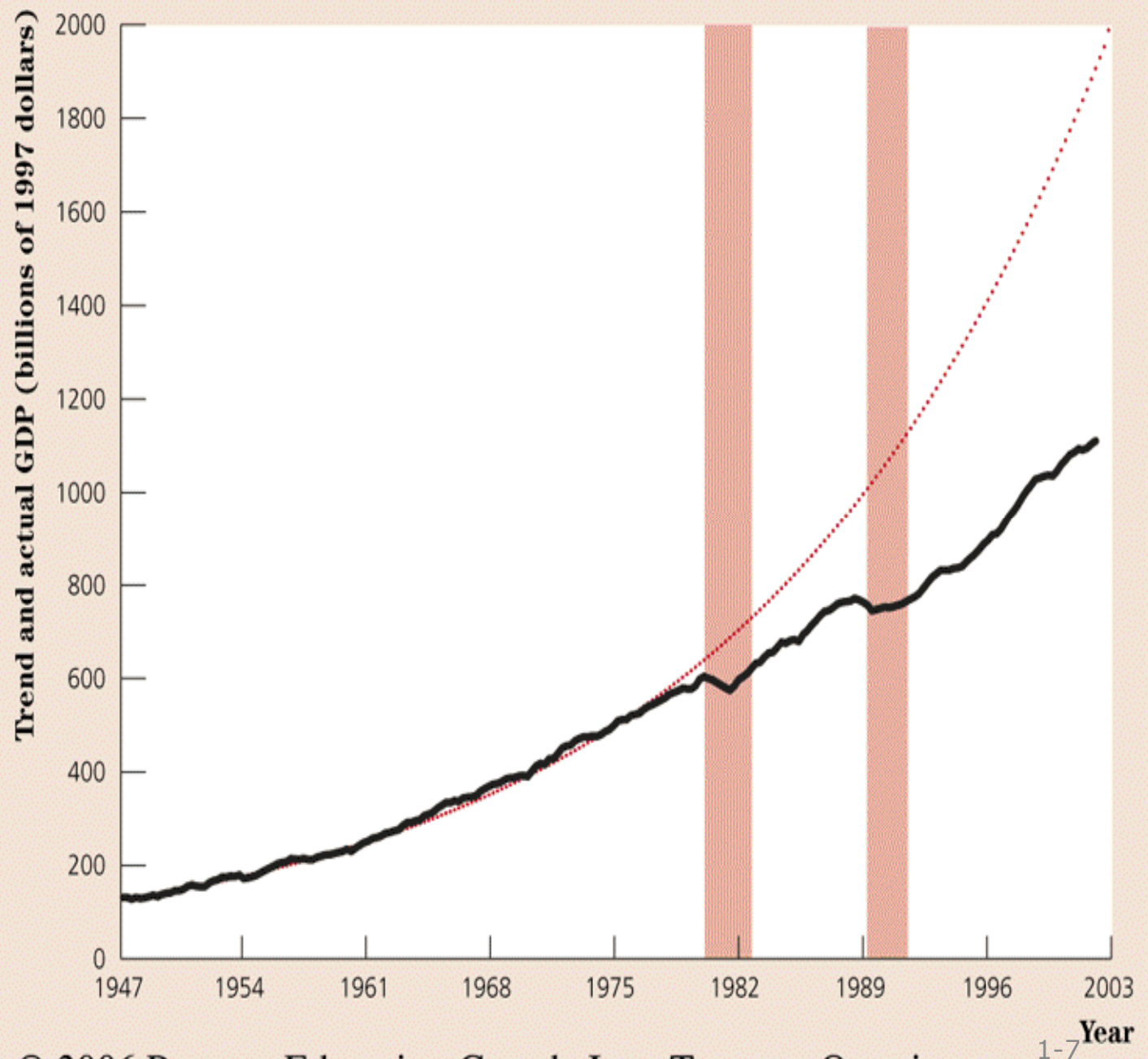
- Why should we care about business cycles?
- Recessions can be very costly to those becoming unemployed.
- Potentially they could have permanent effects on overall living standards (compound growth).

FIGURE 8.2

PERMANENT COMPONENTS OF THE BUSINESS CYCLE?

The figure shows actual Canadian GDP (measured quarterly) and a trend line based on real GDP growth from 1947 to 1981. The economy did not return to the earlier trend line after the 1981–1982 recession. Some economists suggest that recessions are responsible for the economy remaining permanently below the trend line.

Source: Real GDP, quarterly, seasonally adjusted: Adapted from the Statistics Canada CANSIM database <<http://cansim2.statcan.ca>>, Series v1992067 and from *Canadian Economic Observer, Statistical Summary*.



Introduction to Business Cycles

- The two basic questions are:
 1. What causes business cycles?
 2. How policymakers should respond to cyclical fluctuations?

Introduction to Business Cycles

- **Classical economists** view business cycles as representing the economy's best response to disturbances in production and spending.
- **Keynesian economists** argue that because wages and prices adjust slowly, disturbances in production and spending may drive the economy away from its most desirable level of output and employment for long periods of time.

Defining the Business Cycle

- Burns and Mitchell (1946) make 5 main points about business cycle:
 1. Fluctuation of “aggregate economic activity”.
 2. Expansions and contractions.
 - Contraction (recession or depression): time when aggregate economic activity is falling.
 - Trough: end of contraction
 - Expansion (boom): time when aggregate economic activity is growing.
 - Peak: end of expansion

Defining the Business Cycle

3. Co-movement.

- Prices, productivity, investment, and unemployment have regular patterns of behaviour.

4. Recurrent but not periodic.

- It does not occur at regular, predictable intervals and does not last for fixed, predetermined length of time.

5. Persistence.

- Once an expansion or contraction begins it tends to continue for a period of time.

The Canadian Business Cycle

- The Pre-world War I Period:
 - Recessions were common.
- The Great Depression and WWII:
 - Great Depression: worst economic contraction
 - WWII: wartime production increases output
- Post-World War II:
 - Big recession in 1973: OPEC oil shock
 - Recessions in early 1980s & 1990s

Have Business Cycles Become Less Severe?

- Real GDP growth and the unemployment rate are measured to be less volatile after 1945.
- The volatility may look lower due to poor quality of pre-1929 data.
- Further studies seem to confirm that cycles have been significantly moderated in the postwar period.
- Better macro policy may help to reduce fluctuations.

Do Canadian Business Cycles Start in Canada?

- The historical data show a strong coincidence between cycle turning points in Canada and the US.
- A study of business cycles in six major Countries shows that a significant component of the business cycle **does seem to be made in Canada.**

Business Cycle Facts

- Knowing the business cycle facts is useful for interpreting economic data and evaluating the state of the economy.
- Two important characteristics of the cyclical behaviour:
 - the **direction** in which a macroeconomic variable moves relative to the direction of aggregate economic activity;
 - the **timing of the variable's turning points** relative to the turning points of the business cycle.

Direction

- A **procyclical** variable moves in the same direction as aggregate economic activity.
- A **countercyclical** variable moves oppositely to aggregate economic activity.
- An **acyclical** variable does not display a clear pattern over the business cycle.

Timing

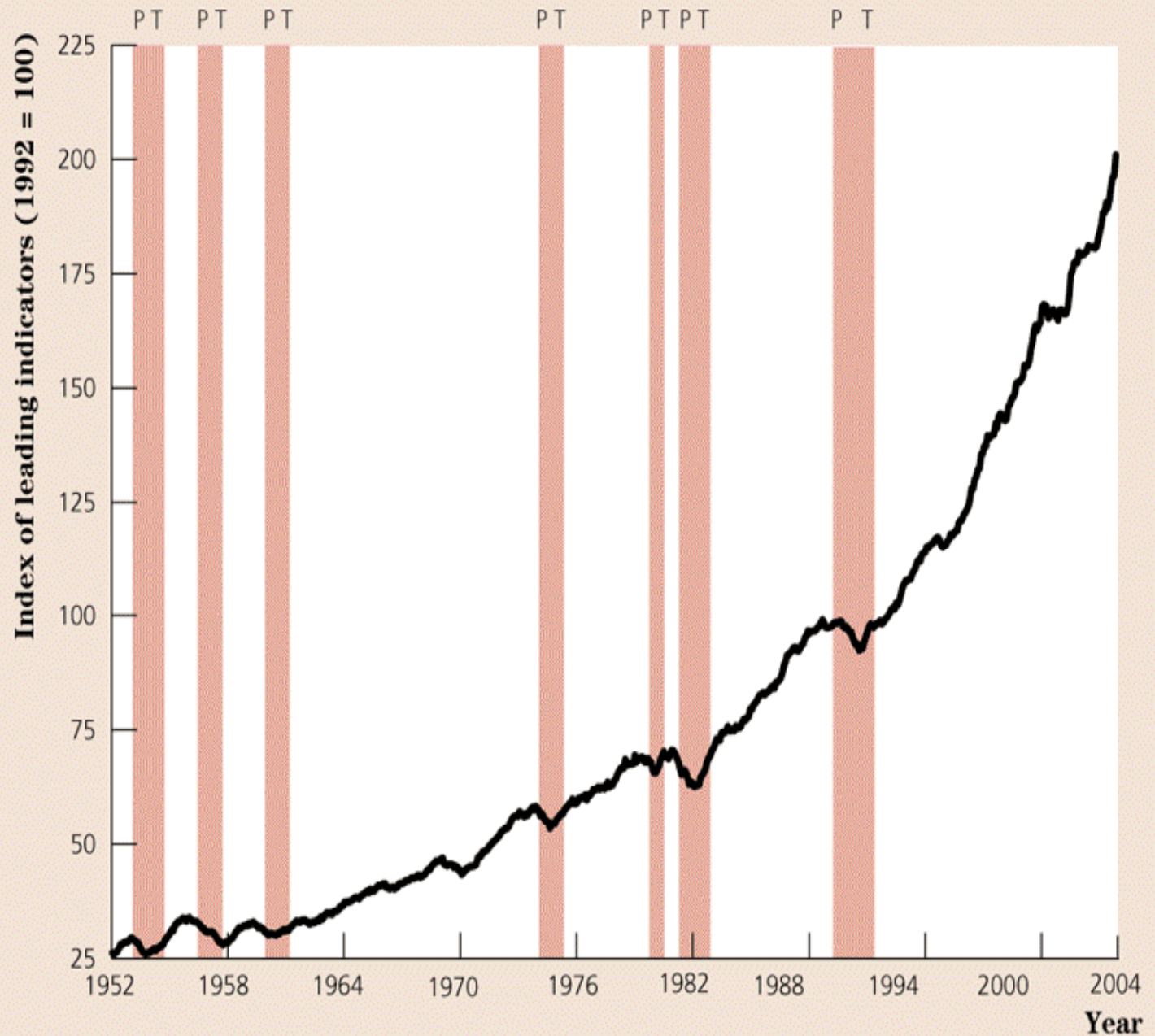
- A **leading** variable's turning points occur before those of the business cycle.
- A **coincident** variable's turning points occur around the same time as those of the business cycle.
- A **lagging** variable's turning points occur later than those of the business cycle.

FIGURE 8.4

THE INDEX OF LEADING INDICATORS

Used for forecasting, the index of leading indicators is a weighted average of 10 economic variables that typically lead the business cycle. The index turns down in advance of business cycle peaks, signalling the onset of recession. Shaded areas represent recessions.

Source: Adapted from the Statistics Canada CANSIM database, <<http://cansim2.statcan.ca>>, Series v7687, or *Canadian Economic Observer, Statistical Summary*, Table 5 (unsmoothed).



Production and the Business Cycle

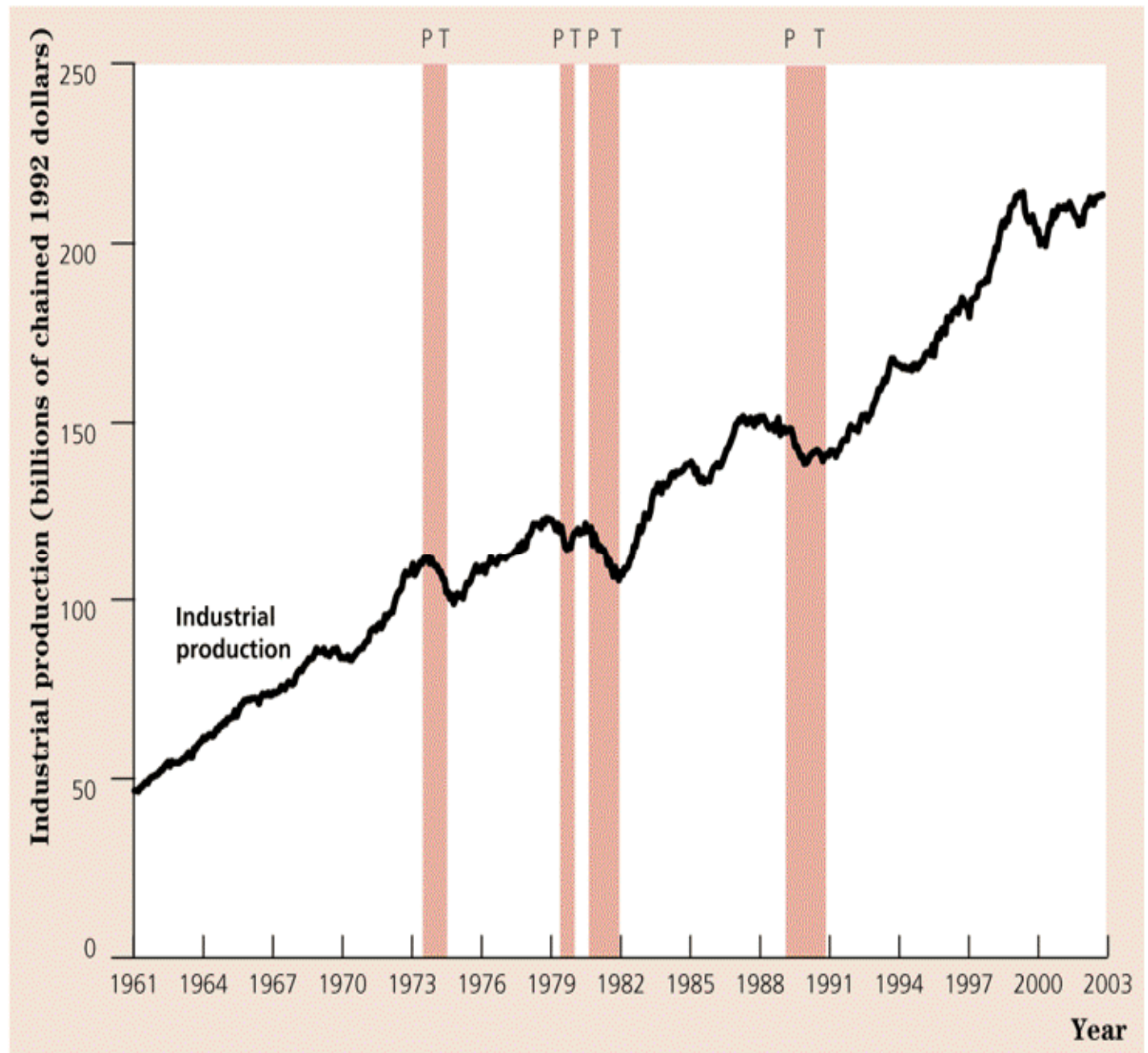
- Production is a coincident and procyclical variable.
- Industries that produce more durable goods or capital goods are more sensitive to the business cycle than the industries producing nondurable goods.

FIGURE 8.5

**CYCLICAL BEHAVIOUR OF
INDUSTRIAL PRODUCTION**

Industrial production, an aggregate of production in all industries, is procyclical and coincident with the business cycle. The peaks and troughs of the business cycle are shown by the vertical lines *P* and *T*. The shaded areas represent recessions.

Source: Monthly industrial production, seasonally adjusted: Adapted from the Statistics Canada CANSIM database, <<http://cansim2.statcan.ca>>, Series V329828 and V2044343.



Expenditure over the Business Cycle

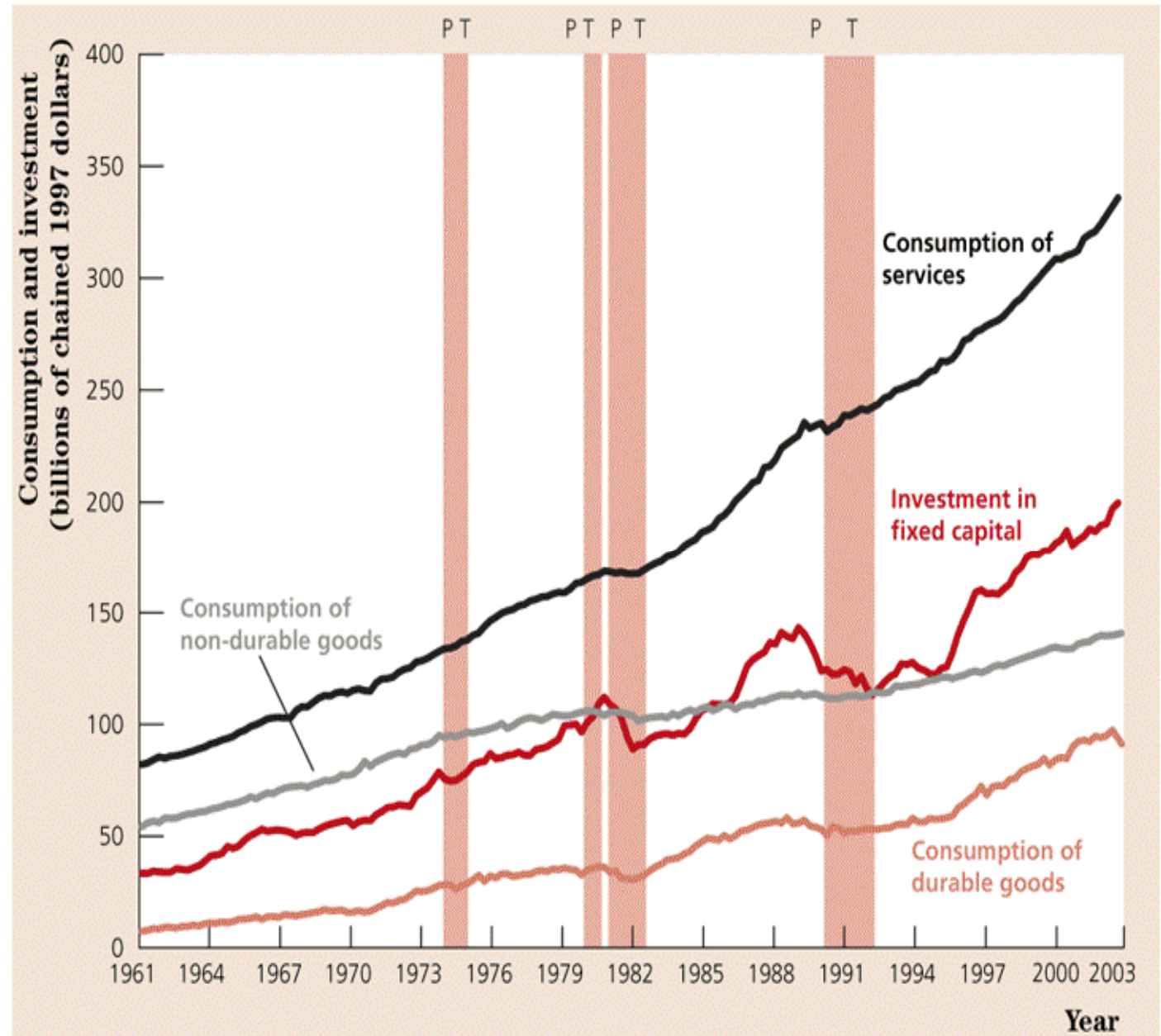
- **Consumption** and **fixed investment** expenditures are procyclical and coincident.
- **Inventory investment** is procyclical, leading, and strongly volatile.
- **Consumption** of **durable goods**, **fixed investment**, and **residential investment** are strongly procyclical.
- The **trade balance** is procyclical and leading. It usually falls sharply before recessions. Business cycles are often transmitted between countries through the trade balance.

FIGURE 8.6

**CYCLICAL BEHAVIOUR OF
CONSUMPTION AND
INVESTMENT**

Both consumption and investment are procyclical. However, investment is more sensitive than consumption to the business cycle, reflecting the fact that durable goods are a larger part of investment spending than they are of consumption spending.

Source: Consumption and business fixed investment, real, quarterly, and seasonally adjusted: Adapted from the Statistics Canada CANSIM database, <<http://cansim2.statcan.ca>>, Series V1992057 and V1992052.



Labour Market over the Business Cycle

- **Employment** is strongly procyclical and coincident.
- The **unemployment rate** is strongly countercyclical and coincident.
- **Average labour productivity** tends to be procyclical and to lead the business cycle.
- The conclusions about cyclicity of real wage remain elusive.

FIGURE 8.9

**CYCLICAL BEHAVIOUR OF
EMPLOYMENT**

Employment is procyclical and
coincident with the business
cycle.

Source: Total employment, monthly,
seasonally adjusted: Adapted from
the Statistics Canada CANSIM
database <<http://cansim2.statcan.ca>>, Series V2062811, and *Canadian
Economic Observer, Statistical
Summary*.

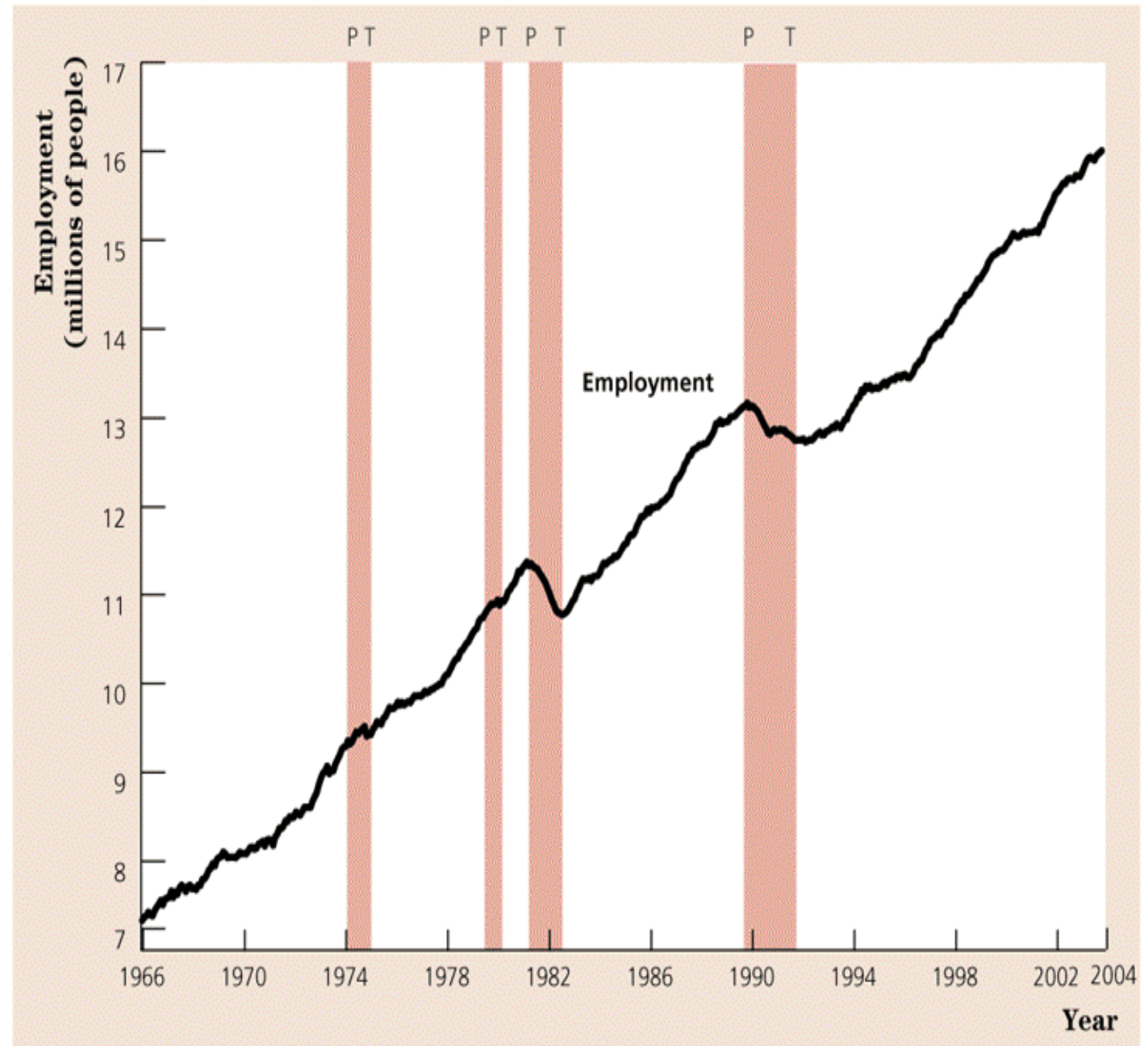


FIGURE 8.10

**CYCLICAL BEHAVIOUR OF
THE UNEMPLOYMENT RATE**

The unemployment rate is countercyclical and very sensitive to the business cycle. It rises rapidly in contractions but falls more slowly in expansions.

Source: Monthly unemployment rate, seasonally adjusted: Adapted from the Statistics Canada CANSIM database <<http://cansim2.statcan.ca>>, Series V2062815, and *Canadian Economic Observer, Statistical Summary*.

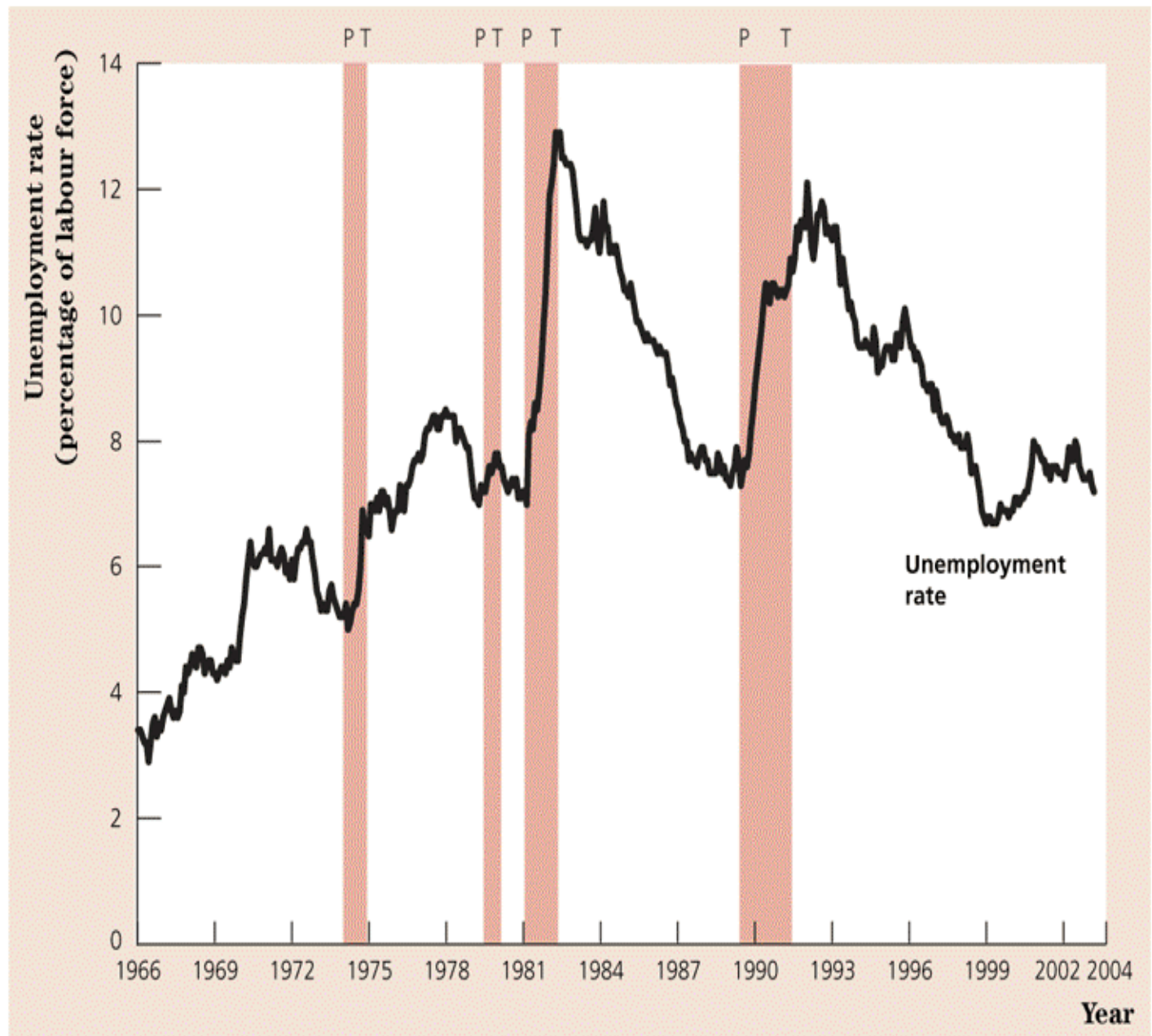
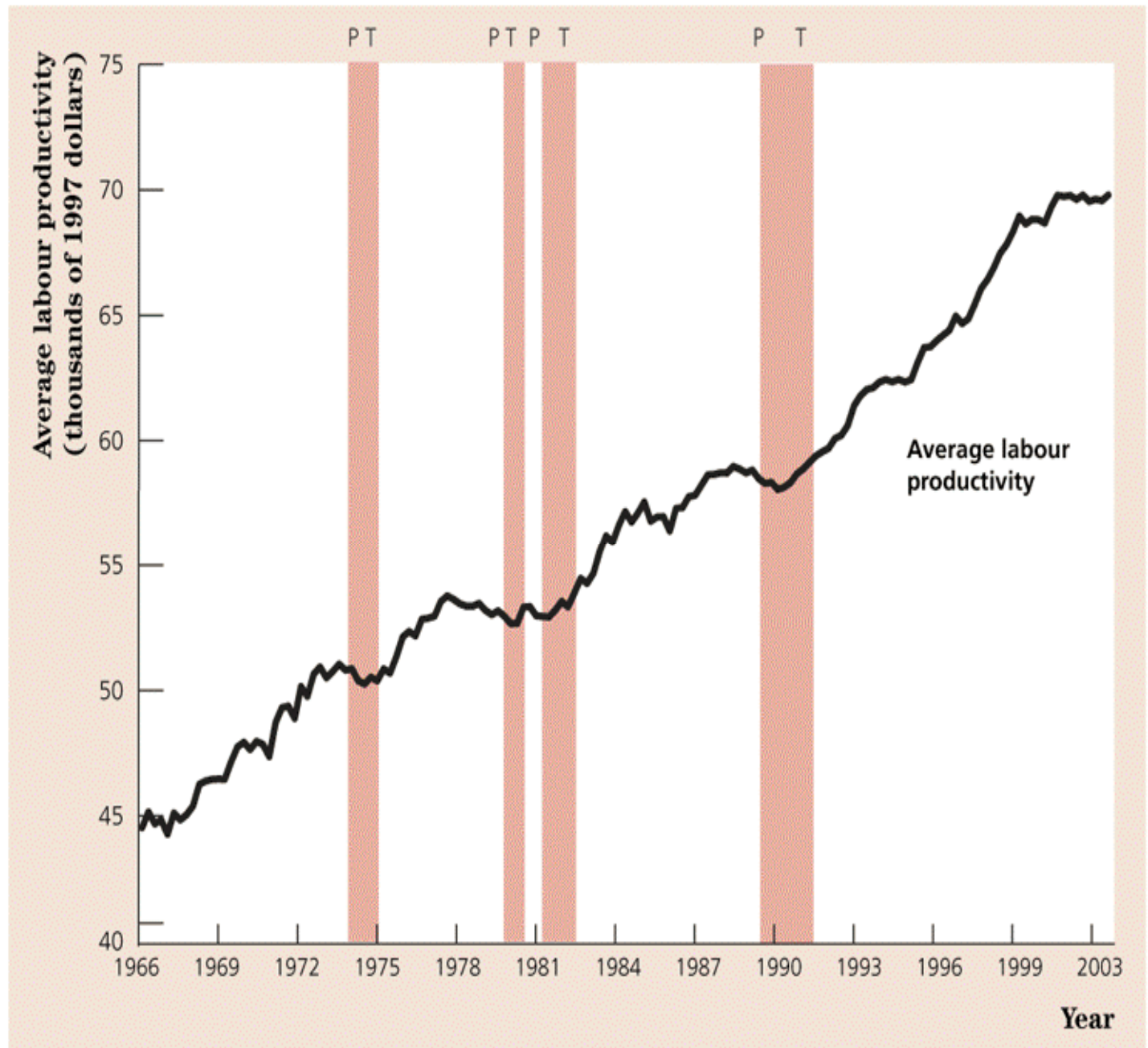


FIGURE 8.11

**CYCLICAL BEHAVIOUR OF
AVERAGE LABOUR
PRODUCTIVITY**

Average labour productivity, measured as real output per person employed, is pro-cyclical and leading.

Sources: Adapted from Quarterly real GDP, seasonally adjusted, CANSIM II series v1992067. Employment, both sexes, 15 years and above: *Canadian Economic Observer, Statistical Summary* and Statistics Canada, CANSIM II series v2062811.



Money Growth and Inflation over the Business Cycle

- The **money growth** is procyclical and leads the cycle as well as it leads the CPI inflation.
- **Inflation** is procyclical, but with some lag.

Financial Variables over the Business Cycle

- **Stock prices** are generally procyclical and leading the cycle.
- **Nominal interest rates** are procyclical and lagging.
- The **real interest rate** is acyclical. It may reflect the facts that individual business cycles have different sources of cycles.

Business Cycle Theories

- Two components:
 - 1) Description of shocks hitting economy
 - 2) Model of how economy responds
- Two major questions:
 - 1) What causes business cycles?
 - 2) How should policy-makers respond?

Aggregate Demand and Aggregate Supply Model

- Both the classical and the Keynesian model theories can be presented within a single aggregate demand – aggregate supply (AD-AS) model.
- The components of the AD-AS model are:
 - the aggregate demand curve;
 - the short-run aggregate supply curve;
 - the long-run aggregate supply curve.

The AD Curve

- The AD curve slopes downward.
- When the price level is higher, people demand less goods.
- The AD shifts when, for a specific price level, non-price factors change the aggregate demand for goods.

The AS Curve

- The Short Run AS is a horizontal line.
- It captures the idea that in the short run, the price level is **fixed** and firms are willing to supply any amount of output at that price.
- Demand varies from day to day, but a firm is not going to change price each day that demand is different (Menu costs).

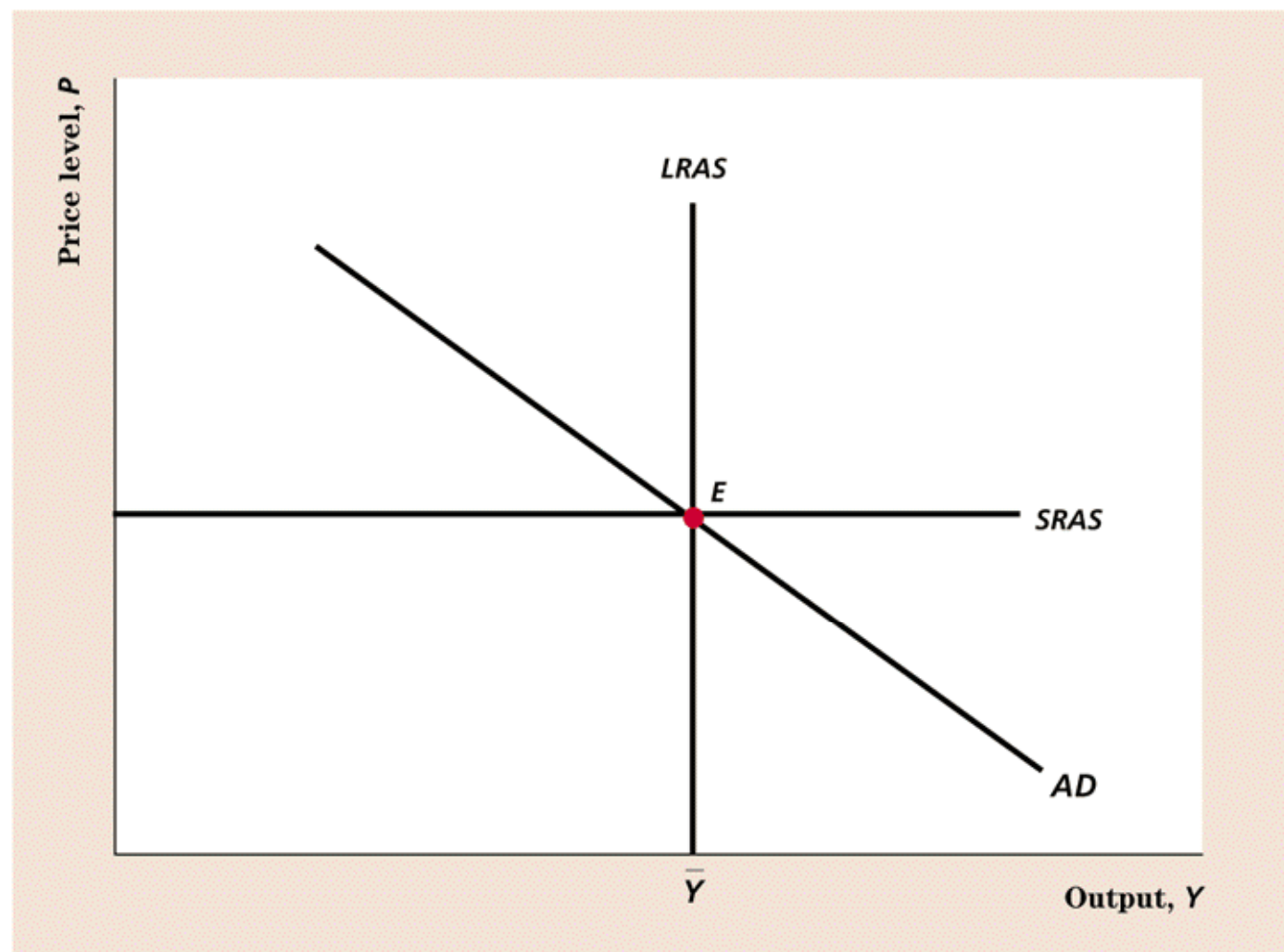
The AS Curve

- The Long Run AS is a vertical line.
- In the long run all firms will adjust their prices so that they can produce at their normal level of output.
- If demand remains high (above full-employment capacity) for long period of time, firm raises P
- For the economy as a whole it will be at the full-employment level of output, \bar{Y} .

FIGURE 8.14

THE AGGREGATE DEMAND–AGGREGATE SUPPLY MODEL

The aggregate demand (AD) curve slopes downward, reflecting the fact that the aggregate quantity of goods and services demanded, Y , falls when the price level, P , rises. The short-run aggregate supply ($SRAS$) curve is horizontal, reflecting the assumption that in the short run, prices are fixed and firms simply produce whatever quantity is demanded. In the long run, firms produce their normal levels of output, so the long-run aggregate supply ($LRAS$) curve is vertical at the full-employment level of output, \bar{Y} . The economy's short-run equilibrium is at the point where the AD and $SRAS$ curves intersect, and its long-run equilibrium is where the AD and $LRAS$ curves intersect. In this example, the economy is in both short-run and long-run equilibrium at point E .



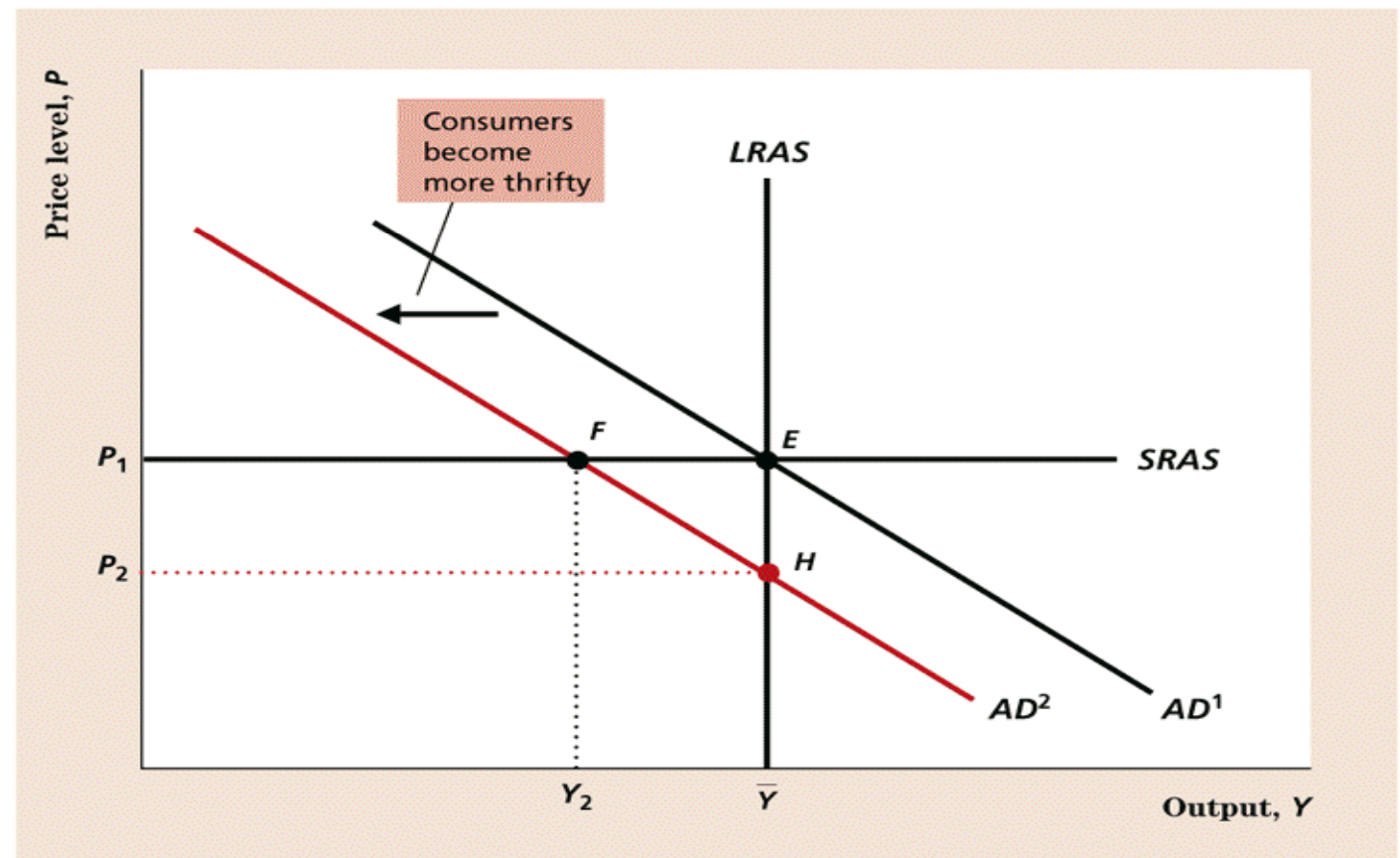
Aggregate Demand Shocks

- An aggregate demand shock is an unpredictable change in the economy that shifts the AD curve.
- An adverse AD shock shifting the AD curve down will cause a output to fall in the SR, but not in the LR.
- **Classical economists** think that the LR equilibrium will be restored quickly. Little is gained by the government trying to fight recession.
- **Keynesians** argue that prices do not adjust quickly, the recession is prolonged, and the government can help to fight it: increase AD.

FIGURE 8.15

AN ADVERSE AGGREGATE DEMAND SHOCK

An adverse aggregate demand shock reduces the aggregate quantity of goods and services demanded at a given price level; an example is that consumers become more pessimistic and, thus, reduce their spending. This shock is represented by a shift to the left of the aggregate demand curve from AD^1 to AD^2 . In the short run, the economy moves to point F . At this short-run equilibrium, output has fallen to Y_2 and the price level is unchanged. Eventually, price adjustment causes the economy to move to the new long-run equilibrium at point H , where output returns to its full-employment level, \bar{Y} , and the price level falls to P_2 . In the strict classical view, the economy moves almost immediately to point H , so the adverse aggregate demand shock essentially has no effect on output in both the short run and the long run. Keynesians argue that the adjustment process takes longer so that the adverse aggregate demand shock may lead to a sustained decline in output.



Aggregate Supply Shocks

- **Classical economists** view aggregate supply shocks as the major force behind changes in output and employment.
- An adverse AS shock shifts the **LRAS curve** to the left thus reducing long-run output and increasing long-run price level.
- **Keynesians** agree with the long-run effects the supply shocks can have, but view the adjustment process to the new equilibrium differently.

FIGURE 8.16

**AN ADVERSE AGGREGATE
SUPPLY SHOCK**

An adverse aggregate supply shock, such as a drought, reduces the full-employment level of output from \bar{Y}_1 to \bar{Y}_2 . Equivalently, the shock shifts the long-run aggregate supply curve from the left, from $LRAS^1$ to $LRAS^2$. As a result of the adverse supply shock, the long-run equilibrium moves from point E to point F . In the new long-run equilibrium, output has fallen from \bar{Y}_1 to \bar{Y}_2 and the price level has increased from P_1 to P_2 .

